

CLAIMS

1. An apparatus for plasma processing with which high-frequency electric power generated by a high-frequency electric power feeding circuit is fed to a plurality of discharge electrodes, and plasma is generated between the discharge electrodes and a substrate which are in a processing chamber into which a gas for processing has been introduced, so as to process a substance on the substrate,

the apparatus for plasma processing comprising:

a voltage distribution regulator for adjusting deviation in distribution of voltage on the discharge electrodes, the distribution of voltage occurring in a direction at right angles to a direction of fed electric power through the discharge electrodes.

2. An apparatus for plasma-enhanced chemical vapor deposition with which high-frequency electric power generated by a high-frequency electric power feeding circuit is fed to a plurality of discharge electrodes, and plasma is generated between the discharge electrodes and a substrate which are in a film formation chamber into which a gas for forming a film containing a substance has been introduced, so as to vapor deposit the substance on the substrate,

the apparatus for plasma-enhanced chemical vapor deposition comprising:

a voltage distribution regulator for adjusting deviation

in distribution of voltage on the discharge electrodes, the distribution of voltage occurring in a direction at right angles to a direction of fed electric power through the discharge electrodes.

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3. An apparatus for plasma-enhanced chemical vapor deposition according to claim 2, wherein the voltage distribution regulator is an impedance changer which is provided to at least one of a plurality of high-frequency
10 cables for supplying high-frequency electric power from the high-frequency electric power feeding circuit to the plurality of discharge electrodes in order to change an impedance at a feeding point for the discharge electrodes toward the high-frequency electric power feeding circuit.

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4. An apparatus for plasma-enhanced chemical vapor deposition according to claim 3, wherein the impedance changer is a stub comprising a branch cable which branches off from the high-frequency cable.

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5. An apparatus for plasma-enhanced chemical vapor deposition according to claim 4, wherein the stub comprises a passive element which is connected to a distal end of the branch cable, and, with a change in a constant of the passive
25 element, the stub changes the impedance at a feeding point for the discharge electrodes toward the high-frequency electric power feeding circuit.

6. An apparatus for plasma-enhanced chemical vapor deposition according to claim 4, wherein, with change in the cable length of the branch cable, the stub changes the impedance at a feeding point for the discharge electrodes toward the high-frequency electric power feeding circuit.

7. An apparatus for plasma-enhanced chemical vapor deposition according to claim 4, wherein, with change in the characteristic impedance of the branch cable itself, the stub changes the impedance at a feeding point for the discharge electrodes toward the high-frequency electric power feeding circuit.

8. An apparatus for plasma-enhanced chemical vapor deposition according to claim 2, wherein the voltage distribution regulator is an impedance changer which is provided between the discharge electrodes and a grounding point in order to change the impedance at a feeding point for the discharge electrodes toward the discharge electrodes.

9. An apparatus for plasma-enhanced chemical vapor deposition according to claim 8, wherein the impedance changer comprises a passive element which is connected between the discharge electrodes and the grounding point, and, with change in a constant of the passive element, the impedance changer changes the impedance between the discharge electrodes and the

grounding point.

10. A method of processing a substrate with an apparatus for plasma processing by feeding high-frequency electric power generated by a high-frequency electric power feeding circuit to a plurality of discharge electrodes, and generating plasma between the discharge electrodes and a substrate in a processing chamber into which a gas for processing has been introduced, so as to process a substance on the substrate,

the method of processing a substrate with an apparatus for plasma processing comprising:

adjusting deviation in distribution of voltage on the discharge electrodes, the distribution of voltage occurring in a direction at right angles to a direction of fed electric power through the discharge electrodes, whereby distribution of voltage at an end part of the substrate, the end part being at an end in the direction at right angles to the direction of fed electric power, and distribution of voltage at a central part of the substrate are balanced, so that distribution of voltage which is applied between the discharge electrodes and the substrate in order to generate plasma is made uniform over the entirety of the substrate.

11. A method for film formation with an apparatus for plasma-enhanced chemical vapor deposition by feeding high-frequency electric power generated by a high-frequency electric power feeding circuit to a plurality of discharge electrodes, and

generating plasma between the discharge electrodes and a substrate in a film formation chamber into which a gas for forming a film has been introduced, so as to vapor deposit the substance on the substrate,

5 the method for film formation with an apparatus for plasma-enhanced chemical vapor deposition comprising:

adjusting deviation in distribution of voltage on the discharge electrodes, the distribution of voltage occurring in a direction at right angles to a direction of fed electric
10 power through the discharge electrodes, whereby distribution of voltage at an end part of the substrate, the end part being at an end in the direction at right angles to the direction of fed electric power, and distribution of voltage at a central part of the substrate are balanced, so that distribution of
15 voltage which is applied between the discharge electrodes and the substrate in order to generate plasma is made uniform over the entirety of the substrate.